

## **ABSTRACT OF THE DISCLOSURE**

The exemplary embodiments of the present invention providing new slurry compositions suitable for use in processes involving the chemical mechanical polishing (CMP) of a polysilicon layer. The slurry compositions include one or more non-ionic polymeric surfactants that will selectively form a passivation layer on an exposed polysilicon surface in order to suppress the polysilicon removal rate relative to silicon oxide and silicon nitride and improve the planarity of the polished substrate. Exemplary surfactants include alkyl and aryl alcohols of ethylene oxide (EO) and propylene oxide (PO) block copolymers and may be present in the slurry compositions in an amount of up to about 5 wt%, although much smaller concentrations may be effective. Other slurry additives may include viscosity modifiers, pH modifiers, dispersion agents, chelating agents, and amine or imine surfactants suitable for modifying the relative removal rates of silicon nitride and silicon oxide.